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SPHAGNUM FUSCOVINOSUM, A NEW SPECIES FROM AUSTRALIA

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In the course of a revision of Australian species of *Sphagnum* for the upcoming *Flora of Australia* a number of taxonomic difficulties have come to light. There appear to be relatively few species in the flora, but there is considerable confusion in their determination, with many names attributed to Australian taxa and many specimens misdetermined, both historically and at the present time. The section *Subsecunda* has furnished the greatest confusion. Most recent collections in this section have been referred to *S. molliculum* (D. G. Catcheside determinations), *S. novo-zelandicum* (A. J. Fife determinations) or to *S. subsecundum* and *S. cymbifolioides* (an illegitimate name fide Wijk et al. 1967) or other taxa (various determiners). Examination of many specimens from Australian herbaria has revealed that, based on very small (1 mm long), broadly triangular stem leaves as a basic diagnostic feature, *S. subsecundum* appears not to be represented in the flora. There is considerable variation in the number of pores along the cell margins of the abaxial surface of the leucocysts in specimens variously assigned to these different taxa within section *Subsecunda* and also considerable gross morphological variation.

Fife (1996), in his studies of New Zealand *Sphagnum*, enumerated two species within the *Subsecunda*: *S. novo-zelandicum*, with branches borne in fascicles, and a new species, *S. simplex*, characterized by having plants chestnut or pale brownish green, unbranched or with a few irregular dichotomies and lacking branch fascicles; stems with a single outer cortical layer in section; leaves broadly ovate, truncate or broadly rounded at the apex, strongly concave, 1.2–3.4 mm long, and bordered by 1–3 rows of narrow elongate cells, the leucocysts with (3–) 10–16 (–18) pores abaxially, and chlorocysts barrel-shaped in section and equally exposed on both surfaces.

Fife examined some anomalous material from Tasmania, earlier assigned tentatively to *S. subsecundum* or to the *Subsecunda* group. In these specimens (*Dalton 91.2*, Tarn Shelf, Mt. Field National Park; *Dobson 77021*, Newdegate Pass, Mt. Field National Park) the plants are larger and have leaves up to 6 mm long. The abaxial pores of leucocysts are smaller (up to 4 μm in diameter compared to 5–7 μm in *S. simplex*). A re-examination of this material and other collections from Ben Lomond, northern Tasmania, and Mt. Field National Park has shown that the Tasmanian material represents an undescribed taxon.

Sphagnum fuscovinosum Seppelt & Crum, sp. nov.—TASMANIA. Mt. Field National Park, Tarn Shelf, 42°41'S, 146°35'E, 21 May 1991, *P. J. Dalton 91.2* (holotype: HO!; isotype, CHR-499322! MICH! Hb. J. Dalton!). Figs. 1–10.

Plantae vinosae vel intense purpureo-fuscae. Caulis simplex vel parce furcatus, usque ad 12 cm altus. Hyalodermis caulis strato uno; cylindrus lignosus pallide luteus vel fuscus, fere sine poris. Folia late ovata, apice truncata, irregulariter 3–5-dentata, usque ad 6 mm longitudine, valde concava, 4–6 seriebus cellularum angustarum limbata; cellulae hyalinae anguste elongatae, superne 150–200 × 15–20 µm, inferne aliquantum longiores, fibrillosae, dorso poris parvis, commissuralibus, 12–20 per cellulam, 4–6 µm diam., rotundis vel ellipticis, interiore folii superficie poris commissuralibus 3–4; cellulae chlorophylliferae orciformes, utroque latere foliorum liberae, hyalinae utroque latere convexae.

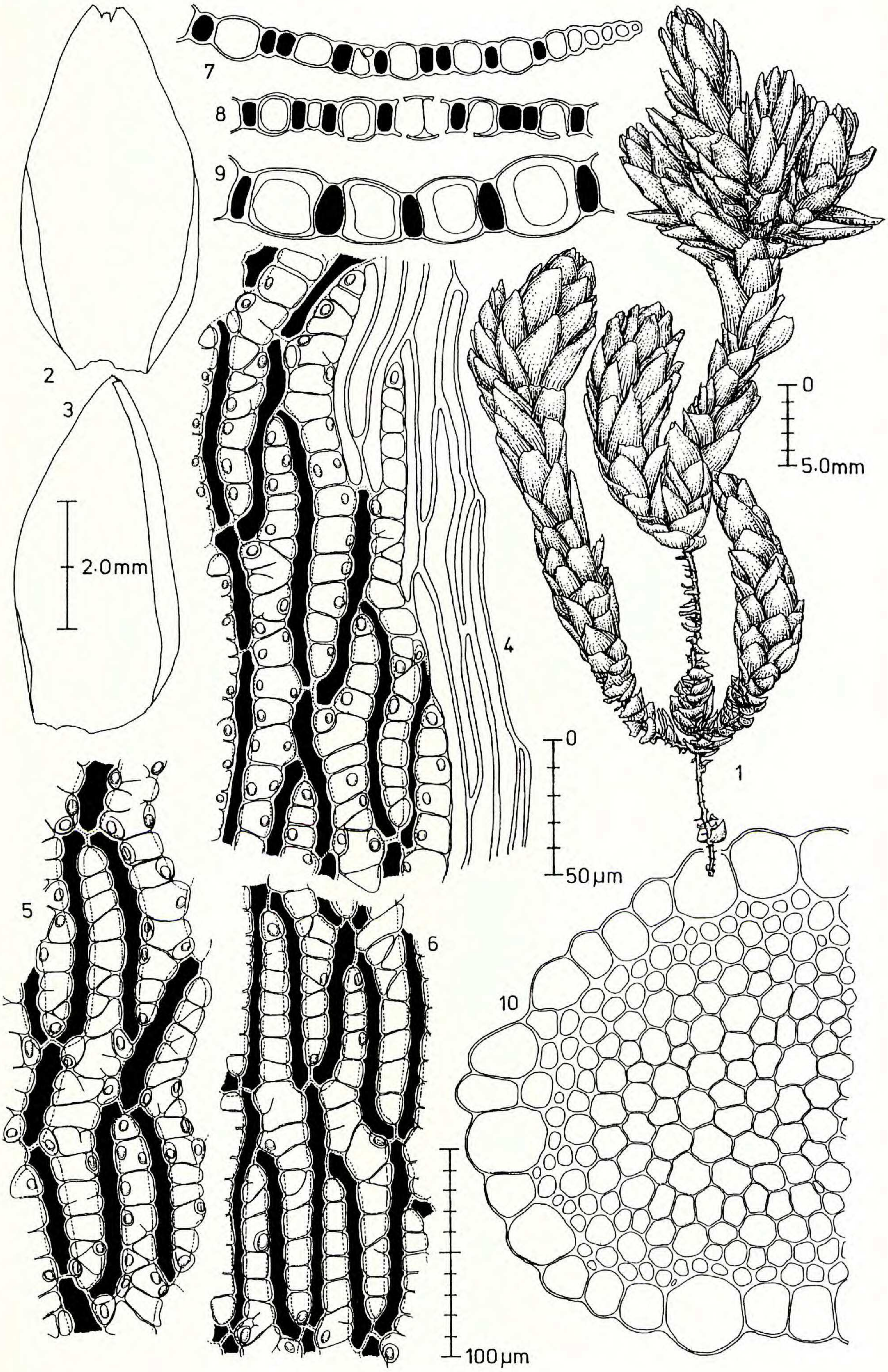
Plants burgundy to deep purple-brown, branching by irregular dichotomies and lacking fascicles; up to 12 cm long. Cortical cells of stem and branches in a single layer surrounding a pale yellow to brown internal cylinder, mostly without pores, retort cells not differentiated. Leaves broadly ovate, apex truncate and irregularly 3–5-toothed, up to 6 mm long, strongly concave, bordered by 4–6 rows of narrow, elongate cells. Hyalocysts narrow-elongate, 150–200 µm long and 15–20 µm wide in upper median leaf, fibrillose, becoming slightly longer below, with 12–20 small pores along margins abaxially, pores 4–6 µm in diameter, rounded to elliptic; adaxial pores few in number, 3–4 per cell, similar in size and position. Leaf cross section with leucocysts convex on both surfaces and chlorocysts barrel-shaped, broadly exposed on both surfaces. Reproductive structures not seen.

Distribution. Tasmania: Mt. Field National Park; Ben Lomond National Park.

ADDITIONAL SPECIMENS EXAMINED. **Tasmania.** Mawson Plateau, Mt. Field National Park, aquatic, in alpine pool, 8 Jul 1982, *P. J. Dalton 82.124* (Hb. J. Dalton); Mt. Field National Park, Mt. Mawson Plateau, submerged in pools, 1170 m, 29 Jan 1978, *A. V. Ratkowsky H 447* (HO 302880); Mt. Field National Park, Newdegate Pass, *Dobson 77021* (CHR 264998); Ben Lomond National Park, free floating in tarn, 13 Jan 1979, *T. Moscal* (HO 83701, 83702).

The species has so far been collected only from shallow alpine moorland pools over basic Jurassic doleritic substrates, at altitudes over 1000 m. Specimens have been found only in shallow pools, either as free floating stems or with the bases of the stems embedded in mud at the bottom of pools, often as isolated plants. The stems are remarkably slender, for the robustness of the leafy plants. There have been too few collections to justify any comment on distributional range, although the majority of collections are from the Mawson Plateau-Tarn Shelf-Newdegate Pass area of Mt. Field National Park. It is likely that the species will be located in other alpine areas, at least over doleritic rather than quartzite or granitic country rock, but detailed surveys have not been undertaken in many areas. Despite a careful survey of the bryoflora by A. V. and D. A. Ratkowsky,

FIGS. 1–10. *Sphagnum fuscovinosum*. 1. Single branched plant. 2, 3. Stem leaves. 4. Abaxial surface of leaf showing cells from near the margin in middle to upper lamina. 5. Abaxial surface of leaf showing cells from middle to upper lamina. 6. Adaxial surface of leaf showing cells from middle to upper lamina. 7–9. Transverse sections of leaves, adaxial surface uppermost. 10. Stem section. Scales = 5.0 mm for plant, 2.0 mm for leaves, 50 µm for marginal and upper lamina cells and leaf sections, and 100 µm for mid-lamina cells and stem section. (Based on *P. J. Dalton 91.2*, holotype.)


7
8
9
2
3
2·0mm
4
0
5·0mm
1
0
50µm
5
6
10
100µm

the taxon has not been located on the Mt. Wellington doleritic plateau near Hobart, some 40 km to the southeast of Mt. Field. The occurrence on Ben Lomond may indicate a possibility of finding the species in alpine locations in southeastern Australia. At least the vascular flora of Ben Lomond and other higher elevation areas of northeastern Tasmania has many affinities with the vegetation of the southeastern Australian mainland where there are, however, no doleritic exposures.

Like *S. simplex* in New Zealand, collections of *S. fuscovinosum* in Tasmania have come from waterlogged habitats in shallow pools in subalpine to alpine locations. Plants of *S. simplex* are a pale chestnut to pale brownish green, compared to the deep purple-brown of *S. fuscovinosum*, the diameter of the branches (i.e., stem and leaves) is narrower (1.5–2 mm compared to 3–5 mm), the leaves are smaller (to 3.4 mm long, compared to 6 mm), and abaxial pores of the hyalocysts larger (5–7 µm compared to 4–6 µm). In plants from the isotype of *S. simplex* there are occasional short shoots that have a stem anatomy different from that of the main stem axis, but there are no fascicular branches. No short shoots have been observed in specimens of *S. fuscovinosum*, although one collection (*Dalton 82.124*, Mt. Mawson plateau) is rather more branched than other collections.

Fife (1996) discussed the relationship of *S. simplex* to various North and South American taxa, concluding that the New Zealand taxon was distinct. *Sphagnum cyclophyllum* Sull. & Lesq. of eastern North America was considered to bear the closest similarity (cf. Crum & Anderson 1981, Vol. 1, fig. 16). *Sphagnum simplex* was also compared to various South American taxa, particularly *S. parcoramosum* Crum, which differs in having a weakly differentiated capitulum, fewer abaxial pores, and no cortical cell pores (Crum 1987), and to *S. paranense* Crum, which has branches, differentiated branch and stem leaves, and more numerous adaxial pores (Crum 1994). *Sphagnum fuscovinosum* is distinctive in having much larger leaves, no differentiated branches, and a deep vinous color.

Ambuchanania (*Sphagnum*) *leucobryoides* from Tasmania (Yamaguchi et al. 1990; Crum & Seppelt 1998) differs in many respects from *S. fuscovinosum*, particularly in its pale straw color, presence of short shoots, very different leaf cell structure, and habitat. The new species is quite unlike any other *Sphagnum* at present known from Australasia.

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